



Features

- 3.3" x 7" x 1.5" Package, Ideal for 1U Applications
- Up to 500W w/air, 350W convection cooled
- Universal Input 90 to 270Vac
- Active current share
- Class I Input
- Standby and Fan Output Voltages
- Inhibit, Power Fail, Output OK Signals
- Approved to IEC60601-1, 3rd Edition & EN60950 2nd Edition
- 2 x MOPP Isolation
- 93% Efficiency @ 230V Input, 92% @ 115V Input
- Optional Cover
- 3 mounting orientations
- 3 Year Warranty
- Low inrush Current

Description

A superior performance 500 Watt AC to DC power supply designed for Medical or Industrial applications. Feature rich and highly efficient, MINT1500 product family with active current share for redundant applications can easily fit in 1U or 2U chassis and provides 350 Watts without cover for convection, or 500 Watts with moving air. Input & output monitoring alarms plus 12V/0.8A fan output and 5V standby voltage are standard features of the MINT1500 family. All models are CE marked to low voltage directive and approved to IEC60601-1 3rd edition, EN60950 2nd edition.

Model Selection

Model Number	Volts	Output Current w/200LFM air	Current Convection	Fan Output	5V Standby Output	Ripple & Noise ¹	Total Regulation	OVP Threshold
MINT1500A2414E01	24V	20.8A	14.6A	12Vdc/0.8A	5V@200mA	1%	±2%	27.6 ± 1.0V
MINT1500A4814E01	48V	10.4A	7.3A	12Vdc/0.8A	5V@200mA	1%	±2%	55.5 ± 2.0V
MINT1500A5614E01	56V	8.9A	6.3A	12Vdc/0.8A	5V@200mA	1%	±2%	64.3 ± 2.0V

Notes: 1) Measured with noise probe directly across output terminals with 0.1µF ceramic and 10µF low ESR capacitors.
For main output load of less than 5%, total noise & ripple will increase to 2%.

General Specifications

AC Input	90-270Vac, 47-63Hz agency approved from 90Vac to 264Vac 120–300Vdc (External fuse required for DC input) Power supply is protected against brown out condition	Turn On Time	<500mS @115Vac
Input Current	115Vac: 5A, 230Vac: 2.5A	Hold-up Time	20 mS minimum at full load & 100 Vac input
Inrush Current	270Vac, cold start: will not exceed 15A	Power Factor Correction	Meets EN61000-3-2, Class A, and D Meets Class C for 500 Watt output
Input Fuses	F1, F2: T10A, 250Vac, provided on all models	Overload Protection Main Output	120% to 140% of current rating, Hiccup Mode
Earth Leakage Current	<275µA@264Vac, 60Hz, NC; <450µA SFC	Short Circuit Protection	Self-recovering
Efficiency	92% typical at 115Vac, 93% typical at 230Vac	Overvoltage Protection	Hiccup Mode, Self-recovering see models chart for trip ranges.
Output Power	500W continuous with 200 lfm airflow, up to 350W convection cooled @ 100Vac, 50°C ambient.	Overtemperature Protection	Provided, self-recovering Automatic power shutdown at TC 135°C/115°C
Transient Response	500 uS typical for return to within 0.5% of nominal, 50% load step from 5% to 100%. $\Delta i/\Delta t: <0.2A/\mu S$. Maximum Voltage Deviation = 3%	Switching Frequency	PFC: Variable, 50-500kHz Main Converter: Variable 40-180 kHz, 65Khz typical
Ripple and Noise Main Output	See models chart	Isolation	Input-Output: 4000Vac, 2 x MOPP Input-Ground: 1800Vac, 1 x MOPP Output-Ground: 700Vdc
Output Voltage	See models chart	Operating Temperature	-10°C to +70°C (Derate output power linearly by 2.5% /°C above 50°C to 50% at 70°C)
Voltage Adjustability	+/-5% from nominal	Storage Temperature	-40°C to +85°C
Minimum Load	Not required	Altitude	Operating: Up to 3000m (derate 5°C for natural Convection Cooling Applications) Non-operating: -150 to 12,000m
Total Regulation	Main Output: ±2%. 12V Fan Output: ±10% (with >0.1A load on main o/p) 5Vsb Output: ±2%	Relative Humidity	5% to 95%, non-condensing
Vibration	Operating: 0.003g²/Hz, 1.5grms overall, 3 axes, 1 hr/axis Operating: 0.026g²/Hz, 5.0grms overall, 3 axes, 10 min/axis	Shock	Operating: Half-sine, 40gpk, 8ms, 3 axes, 6 shocks total
Dimensions	W: 3.3" x L: 7.0" x H: 1.5" W: 84mm x L: 178mm x H: 38mm With Fan Option: Top Mount: 3.3" x 7.0" x 2.09" With IEC: 3.3" x 8.15" x 1.58"	Safety Standards	EN/CSA/UL/IEC 60601-1, 3 rd Edition
Weight	680g. 750g w/cover	MTBF	Over 500,000 hours, 25°C Ambient, 115Vac input
Cover Option	Replace Letter "A" to "C" for this option Example: MINT1500C2414E01	Current Share	Single wire current share for up to 3 units. Please consult Application notes for proper wiring

Auxiliary Signals

Power Good:	Signal goes HIGH 100-250mS after main output is in regulation, and goes LOW with 7ms warning time before loss of main output due to loss of AC input (Output is measured above 90% nominal voltage)	DC OK:	During normal operation, this signal is logic HIGH. Signal will go LOW for output less than 90% of nominal.
Inhibit:	Logic High or Open = On Low/ground = Off	Current Sharing	Active single wire, for up to 3 units in parallel
PS Off:	Low or Open = ON Logic High = OFF		

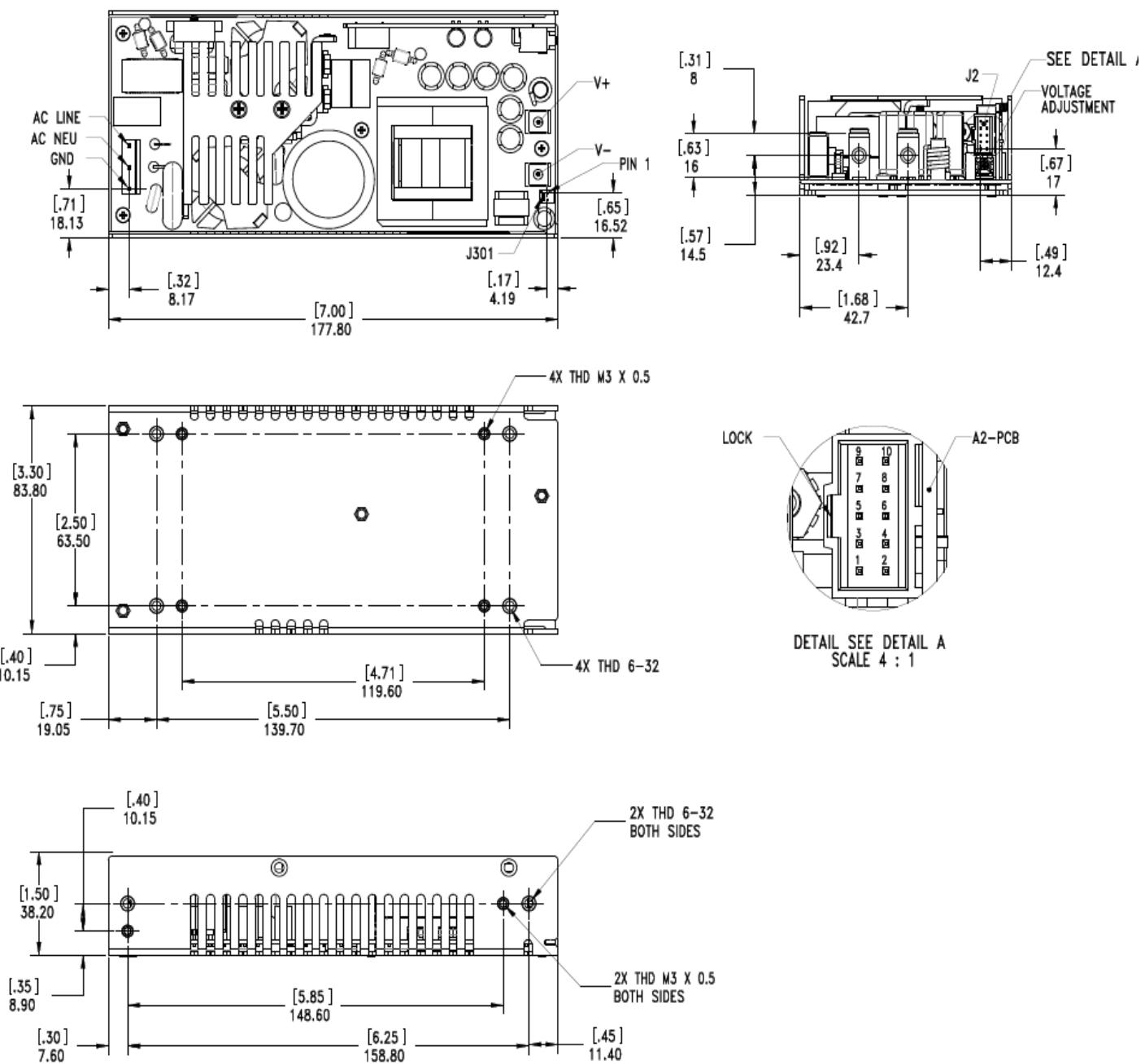
EMI/EMC Compliance

Conducted Emissions	EN55011/22 Class B, FCC Part 15, Subpart B, Class B
Radiated Emissions	EN55011/22 Class A; FCC Part 15, Subpart A, Class A
Static Discharge Immunity	EN61000-4-2, Criteria A, 6kV Contact Discharge, 8kV air discharge
Radiated RF Immunity	EN61000-4-3, 3V/m;10V/M Criteria A, B
EFT/Burst Immunity	EN61000-4-4, 2kV/5kHz
Line Surge Immunity	EN61000-4-5, 1kV differential, 2kV common-mode
Conducted RF Immunity	EN61000-4-6, 3Vrms
Power Frequency Magnetic Field Immunity	EN61000-4-8, 3A/m
Voltage Dip Immunity	EN61000-4-11, 0% Vin, 10mS; 40% Vin, 100mS (60% load); 70% Vin, 500mS (80% load); 0% 5000mS; Criteria A, A, A, B.
Line Harmonic Emissions	EN61000-3-2, Class A, and D Meets Class C for 500 Watt output
Flicker Test	EN61000-3-3, Complies

Isolation Specifications

Parameter	Conditions/Description	Min	Nom	Max	Units
Insulation Safety Rating	Input/Ground Input/Output Output/Ground		1 MOPP 2 MOPP Operational		
Electric Strength Test Voltage	Input/Ground Input/Output Output/Ground	1800 4000 700	-	-	Vac Vac Vdc

Mechanical Drawings



Connector Information

Input Connector J1 (E Version))	DC Output Connector	Fan Output Connector J301	Signal Connector J2 (see Detail B on prior page)	
PIN 1) GROUND PIN 3) AC NEUTRAL PIN 5) AC LINE	(2) Buss Bars (M5 x 0.5 Screws): 1) +Vout 2) RTN	PIN 1) +12Vfan PIN 2) RTN	PIN 1) Remote Sense + PIN 2) Remote Sense – PIN 3) +5Vsb RTN PIN 4) RTN PIN 5) +5Vsb	PIN 6) Power_Good PIN 7) Current Share PIN 8) PS_Off PIN 9) Enable PIN 10) DC_OK
Mating Connector: AMP 770849-5 or 647402-5 Pins= 3-770522-1 or 3-647409-1	Mating Connector: #M3 Spade or Ring Lugs	Mating Connector: AMP 1375820-2, 3-640441-2, or Molex 22-01-3027 Pins = AMP 1375819-1 or Molex 08-50-0114	Mating Connector: Molex 90142-0010 Pins = 90119-2109 or 2120	

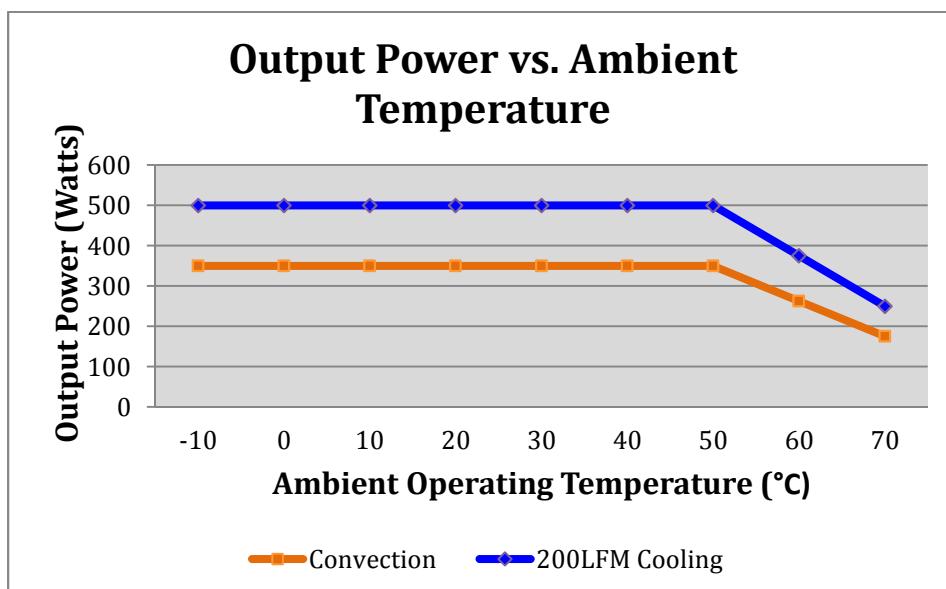
Fan Options

Consult Factory

Characteristic Curves

Output vs. Temperature

350W convection cooled and 500W continuous with 200 LFM airflow. Derate output power to 50% at 70°C.



Power Good, DC OK, Inhibit Signals and Current Sharing – J2

1. Power_Good: - Output Signal – J2 Pin 6

During normal operation is Logic High, goes HIGH 100-250 ms after main output is in regulation, and goes LOW with 7ms warning time before loss of main output due to loss of AC input.

Note: Power_Good signal is a combination of AC OK (Internal) and DC_OK such that failure of either one will cause the Power_Good signal to go low.

Logic High: >4.5V sourcing 16mA

Logic Low: <0.5V sinking 16mA

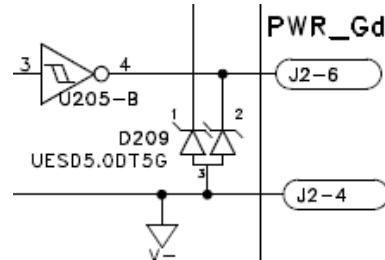


Figure 1

2. DC_OK: Output signal – J2 Pin 10

During normal operation, this signal is logic High. It will go logic Low for output less than 90% of its nominal rated voltage.

Logic High: >4.5V sourcing 16mA
Logic Low: <0.5V sinking 16mA

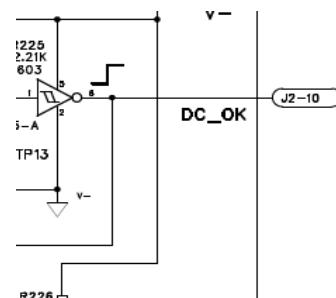


Figure 2

3. Enable: Input signal – J2 Pin 9

Logic High or Open = ON
Low/ground = OFF

Logic High >3.4V
Logic Low <1.2V

Internal pull up resistor: 43KΩ to 5V

4. PS_Off: Input signal – J2 Pin 8

Logic Low or Open = ON
Logic High = OFF

Logic High >3.4V
Logic Low <1.2V

Internal pull down resistor: 43KΩ to V-.

5. Remote Sense Output Signal – J2 Pin 1 (+Sense), J2 Pin 2 (-Sense)

Less than 250mV voltage drop compensation due to cable loss on each side of main output. See Figure 3 for wiring connection.

6. Stand-By Output – J2 Pin5 (+), J2 Pin 4 (-)

The standby output is always available when AC input is present. It is rated for 5V/0.2A.

